

CLAIMS

What is claimed is:

1. A method of indexing data blocks according to a collection of subject words, comprising:

5 constructing a N-dimensional coordinate space, wherein N is a cardinality of the collection of subject words.

2. The method of claim 1, further comprising:

 traversing data block links leading to discovery of cross-subject affinities.

10 3. The method of claim 1, further comprising:

 determining a closeness of any two data blocks in said database.

4. The method of claim 3, wherein said determining is performed according to an equation comprising:

$$D(p_1, p_2) = \sqrt{\sum_{i=1}^N (p_{1i} - p_{2i})^2}$$

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where D is a data block and p1, p2 are points in the N-dimensional space and S is a summation.

5. The method of claim 1, wherein affine documents are determined to be in closer proximity than non-affine documents in a mapping to N-space coordinates.

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6. The method of claim 1, wherein all dimensions of said N-dimension coordinate space are considered.

7. The method of claim 1, wherein said data blocks comprise documents, said method further comprising:

10 building a term-by-document matrix and using all of the terms in N-dimensions in the coordinate space.

8. The method of claim 7, further comprising:

 utilizing a column term in the term-by-document matrix as a vector.

15 9. The method of claim 1, further comprising:

 measuring a distance function between data blocks, wherein said distance function is representative of an affinity between two data blocks.

10. The method of claim 1, further comprising:

 building a proximity list for each data block.

11. The method of claim 1, further comprising:

navigating through data blocks based on a content of said data blocks,
said navigating being performed by selectively moving from one page to
another without traversing a hypertext link.

5 12. The method of claim 1, wherein said data blocks comprise any of Web
pages, images, and database entries indexed such that each data block resides
in a specific point in the N-dimensional coordinate space, and

wherein a placement of the data blocks in the coordinate space is
performed such that data blocks which are relatively closer to each other are
10 related to a same subject.

13. The method of claim 10, wherein the proximity list is ordered in
ascending order of proximity, with a closest point being listed first.

14. The method of claim 10, further comprising reordering the proximity list
by changing a coordinate of a current location.

15 15. The method of claim 10, wherein the proximity list is changed when a
current position is changed to a position of a visited data block.

16. The method of claim 10, wherein a user selectively follows one of a link
from a data block and follows an item in the proximity list, to navigate
independently of links found in other data blocks.

17. The method of claim 1, wherein said data blocks are selectively traversable by using hypertext links and by not using hypertext links.

18. A method of navigating a database, comprising:

plotting documents in said database in space based on a content thereof.

19. The method of claim 18, further comprising:

determining a closeness of any two documents in said database.

20. The method of claim 18, wherein said plotting comprises:

constructing a N-dimensional coordinate space, wherein N is a cardinality of a collection of subject words.

21. The method of claim 18, further comprising:

traversing document links leading to discovery of cross-subject affinities of documents.

22. A method for indexing a database, comprising:

constructing a coordinate system; and

mapping documents of said database into the coordinate system to determine a physical closeness of first and second documents of said database.

23. A system for indexing data blocks according to a collection of subject words, comprising:

a construction unit for constructing a N-dimensional coordinate space, wherein N is a cardinality of a collection of subject words.

5 24. The system of claim 23, further comprising:

traversing data block links leading to discovery of cross-subject affinities.

25. The system of claim 23, further comprising:

10 a determining unit for determining a closeness of any two data blocks in said database.

26. The system of claim 25, wherein said determining by said determining unit is performed according to an equation comprising:

$$D(R, P) = \sqrt{\sum (R_i - P_i)^2}$$

15 where D is a data block and p1, p2 are points in the N-dimensional space and S is a summation.

27. The system of claim 25, wherein affine documents are determined by said determining unit to be in closer proximity than non-affine documents in a mapping to N-space coordinates.

5 28. The system of claim 23, wherein all dimensions of said N-dimension coordinate space are considered.

29. The system of claim 23, wherein said data blocks comprise documents, said construction unit comprising:

10 a unit for building a term-by-document matrix and using all of the terms in N- dimensions in the coordinate space.

30. The system of claim 29, further comprising:

means for utilizing a column term in the term-by-document matrix as a vector.

15 31. The system of claim 23, further comprising:

a measuring unit for measuring a distance function between data blocks, wherein said distance function is representative of an affinity between two data blocks.

32. The system of claim 23, further comprising:

20 a unit for building a proximity list for each data block.

33. The system of claim 23, further comprising:

a navigation unit for navigating through data blocks based on a content of said data blocks, said navigating being performed by selectively moving from one page to another without traversing a hypertext link.

5 34. The system of claim 23, wherein said data blocks comprise any of Web pages, images, and database entries indexed such that each data block resides in a specific point in the N-dimensional coordinate space, and

wherein a placement of the data blocks in the coordinate space is performed such that data blocks which are relatively closer to each other are
10 related to a same subject.

35. The system of claim 32, wherein the proximity list is ordered in ascending order of proximity, with a closest point being listed first.

36. The system of claim 32, further comprising:

a reordering unit for reordering the proximity list by changing a
15 coordinate of a current location.

37. The system of claim 32, wherein the proximity list is changed when a current position is changed to a position of a visited data block.

38. The system of claim 32, wherein a user selectively follows one of a link from a data block and follows an item in the proximity list, to navigate independently of links found in other data blocks.

5 39. The system of claim 32, wherein said data blocks are selectively traversable by using hypertext links and by not using hypertext links.

40. A system for navigating a database, comprising:

a plotter for plotting documents in said database in space based on a content thereof.

41. The system of claim 40, further comprising:

10 a determining unit for determining a closeness of any two documents in said database.

42. The system of claim 40, wherein said plotter comprises:

a unit for constructing a N-dimensional coordinate space, wherein N is a cardinality of a collection of subject words.

15 43. The system of claim 40, further comprising:

a traversal unit for traversing document links leading to discovery of cross-subject affinities of documents.

44. A system for indexing a database, comprising:

a unit for constructing a coordinate system; and

a mapping unit for mapping documents of said database into the coordinate system to determine a physical closeness of first and second documents of said database.

- 5 45. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of indexing data blocks according to a collection of subject words, said method comprising:

10 constructing a N-dimensional coordinate space, wherein N is a cardinality of a collection of subject words.

46. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of navigating a database, said method comprising:

15 plotting documents in said database in space based on a content thereof.

47. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of indexing a database, said method comprising:

20 constructing a coordinate system; and
 mapping documents of said database into the coordinate system to determine a physical closeness of first and second documents of said database.